

WHAT IS CLAIMED IS:

1. A system for auditing a vending machine, the system comprising:
 - an audit device mounted in a vending machine;
 - 5 a multi-drop bus (MDB) interface in the audit device for communicating with an MDB interface of a vending machine controller (VMC) in the vending machine;
 - a DEX interface in the audit device for communicating with a DEX interface of the vending machine controller (VMC) in the vending machine;
 - 10 a computer interface in the audit device for communicating with a handheld computer;
 - a clock in the audit device;
 - clock control logic in the audit device for
 - 15 automatically synchronizing the clock in the audit device with a clock in the handheld computer;
 - nonvolatile memory in the audit device for storing DEX data and MDB data;
 - audit control logic in the audit device for
 - 20 automatically collecting DEX data and MDB data from the VMC, the audit control logic storing timestamps with the DEX and MDB data to record occurrence times for individual events and conditions within the vending machine;
 - 25 authentication control logic for preventing unauthorized communications over the computer interface; and
 - transfer control logic for transferring collected DEX data and MDB data from the audit device to the
 - 30 handheld computer, such that the collected DEX data and

MDB data may be transferred from the audit device to a central operations center via the handheld computer.

2. A method for auditing a vending machine, the method comprising:

automatically collecting audit data in an audit device mounted in a vending machine according to

5 predefined collection criteria ;

storing the audit data with associated timestamps to record occurrence times for individual events and conditions within the vending machine;

receiving authentication information from a handheld
10 computer at the audit device;

in response to the authentication information, testing the authentication information for validity; and

in response to receiving valid authentication data, synchronizing a clock in the audit device with a clock in
15 the handheld computer and transferring at least a portion of the audit data to the handheld computer.

3. The method of Claim 2, further comprising transmitting the audit data from the handheld computer to
20 a host application on a central computer for analysis.

4. The method of Claim 2, further comprising:
receiving via a wireless communications interface included in the audit device, an electronic lock

25 actuation instruction from the handheld computer; and

actuating, by the audit device, an electronic lock in the vending machine according to the electronic lock instruction.

5. An apparatus for collecting, storing and communicating vending machine data, comprising:
- at least one processor;
 - at least one memory operably coupled to the
- 5 processor; and
- at least one communication port operably coupled to the processor and the memory, the communication port operable to communicate vending machine transaction data including cashless transaction data obtained from a
- 10 cashless media device to a handheld computing device.
6. The apparatus of Claim 5, further comprising a wireless communication port operably coupled to the memory and the processor operable to communicate with the
- 15 handheld computing device using an approximately 2.4 GHz radio spectrum.
7. The apparatus of Claim 5, further comprising a wireline communication port operably coupled to the
- 20 memory and the processor operable to communicate with the handheld computing device via a wired coupling.
8. The apparatus of Claim 5, further comprising the handheld computing device operable to obtain cashless
- 25 vending machine transaction data directly from the cashless media device via the at least one communication port.

9. The apparatus of Claim 5, further comprising electronic lock control logic operably coupled to the processor and the memory, the electronic lock control logic operable to command a vending machine electronic
5 lock in response to a request received from the handheld computing device.

10. The apparatus of Claim 5, further comprising the at least one communication port operable to
10 communicate DEX data and multi-drop bus data obtained by the vending machine controller to the memory for storage.

11. The apparatus of Claim 5, further comprising an expansion bus port, the expansion bus port operable to
15 connect to an expansion bus port of a cashless media device such that cashless vending machine transaction data may be communicated.

12. The apparatus of Claim 5, further comprising a
20 secure application module operable to store at least one security key for authentication of digital signatures and data encryption in communications with a handheld computing device.

25 13. The apparatus of Claim 5, further comprising the memory operable to store an audit trail including transactions performed via the handheld computing device.

14. The apparatus of Claim 5, further comprising the processor operable to capture a state image, the state image identifying at least one aspect of vending machine status at a point in time.

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15. The apparatus of Claim 5, further comprising the memory operable to store a reference image identifying at least one aspect of a previous vending machine state.

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16. The apparatus of Claim 15, further comprising:
the communications port operable to communicate the reference image to the handheld computer;

the processor operable to capture a current image
15 identifying at least one aspect of a substantially
current vending machine state; and

the handheld computer operable to calculate a difference between the reference image and the current image.

17. A method for communicating with a vending machine, comprising:

transmitting information from a handheld computer to a vending machine via a wireless communications interface
5 in the vending machine operating substantially in accordance with at least one unlicensed radio band; and

receiving information at the handheld computer from the vending machine via a wireless communications interface in the handheld computer operating
10 substantially in accordance with at least one unlicensed radio band.

18. The method of Claim 17, further comprising downloading audit information and cashless transaction
15 data from the vending machine to the handheld computer.

19. The method of Claim 18, further comprising communicating the cashless transaction data to at least one agency responsible for payment on accounts associated
20 with the cashless transaction data.

20. A method according to Claim 17, further comprising:

transmitting an unlock command from the handheld
25 computer to the vending machine via the communications interface; and

unlocking the vending machine in response to receiving the unlock command from the handheld computer by the vending machine.

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21. The method of Claim 20, further comprising:
receiving a security certificate from the handheld
computer at the vending machine;

determining, at the vending machine, whether the
5 security certificate is valid; and
unlocking the vending machine in response to
validation of the security certificate.

22. The method of Claim 17, further comprising
10 upgrading at least one aspect of vending machine audit
device functionality via the vending machine
communications interface that operates at approximately a
2.4 GHz radio spectrum from the handheld computer.

23. The method of Claim 17, further comprising
15 configuring at least one aspect of functionality included
in a vending machine audit device via an audit device
communications interface that operates at approximately a
2.4 GHz radio spectrum from the handheld computer.

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24. The method of Claim 17, further comprising
transmitting to the handheld computer a vending machine
audit trail including recorded and timestamped vending
machine transactions and errors.

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25. The method of Claim 17, further comprising
transmitting to a handheld computer recorded transactions
occurring between the vending machine and one or more
handheld computers.

26. A vending machine comprising:
vending hardware;
a vending machine controller operably coupled to the
vending hardware;
5 an electronically controllable lock; and
an audit device having a communications interface
operably coupled to the vending machine controller and in
communication with the electronically controllable lock,
the audit device operable to receive an unlock command
10 from a handheld computer via the communications interface
and unlock the vending machine in response to receiving
the unlock command from the handheld computer.

27. The vending machine of Claim 26, further
15 comprising:
a cashless media device operable to enable a
cashless vending transaction; and
the audit device operable to permit communication of
a record associated with a cashless vending transaction
20 to the handheld computer.

28. The vending machine of Claim 27, further
comprising the audit device operable to initiate
collection on accounts for a cashless vending transaction
25 via transmission of the transaction records to the
handheld computer followed by transmission of the
cashless transaction records to at least one agency
responsible on the accounts via the handheld computer.

29. The vending machine of Claim 27, further comprising the audit device operable to permit direct communication between the handheld computer and the cashless media device.

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30. The vending machine of Claim 26, further comprising the audit device operable to maintain an audit trail of transactions occurring at the vending machine.

10 31. The vending machine of Claim 30, further comprising the audit trail including transactions between the handheld computer and the audit device.

15 32. The vending machine of Claim 30, further comprising selected transactions in the audit trail including a timestamp indicating a time of occurrence for the selected transaction.

20 33. The vending machine of Claim 26, further comprising a security application module operable to effect at least one authorization verification with the handheld before permitting a handheld computer transaction.

25 34. The vending machine of Claim 26, further comprising the audit device operable to obtain DEX and multi-drop bus transaction data recorded by the vending machine controller for storage in an audit device memory.